The Newsletter of the
Department of Chemistry
at Cornell University and the
Society of Cornell Chemists

Cornell Chemistry

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New Courses Added to Undergraduate Curriculum

Chemistry For the Applied Sciences

The introduction of Chemistry 211, *Chemistry for the Applied Sciences*, signals a major change in the undergraduate chemistry course offerings at Cornell.

Until last Fall, all students who intended to pursue science or engineering courses beyond their freshman year had to start with Chem 207. The Chem 207-208-300 sequence was designed as a three-term, introductory overview course for students who intend to take further courses in chemistry.

Non-chemical Engineering students, who are required to take *one* semester of chemistry, were left with little choice but Chem 207, taken without its partners. That situation resulted in engineering students getting an incomplete survey of chemical topics which might be of use to them later in their careers.

Chem 211 is designed especially for the *non-chemical* engineers. It is structured as a one-semester course, and offers a comprehensive overview of chemistry, with some emphasis on the fields of chemistry that engineers are likely to encounter, such as solid state materials, periodic trends, and polymeric materials. The course includes 3 hours of lectures and a recitation each week, and 3-4 hours of lab every other week.

The laboratory sections of Chem 211 are primarily designed to convey the excitement of modern chemistry by giving students hands-on experience. Last semester, Professor Frank DiSalvo guided the students through preparation of one of the new, high-temperature superconducting materials; then it was time to make polymers! Those experiments and others will help engineering students to understand how chemistry is likely to impact their professional careers. Professor DiSalvo is hopeful they will "pick up a few chemical principles which may be useful."

The World of Chemistry

Professor Roald Hoffmann offered a new course, *The World of Chemistry*, for the first time during the Fall 1988 semester. The course, which is intended for non-science undergraduates, explores the art and science of chemistry and its historical part in shaping the culture of the world.

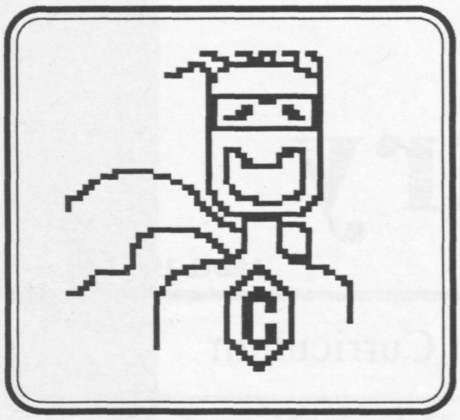
Using as case studies two contemporary chemical papers, Professor Hoffmann introduced students to the basic concepts of chemistry, and demonstrated the science's relationship to history and philosophy. The small class size (enrollment was limited to 20) facilitated lively discussions about social responsibility and economics, as students explored the sociology of science. Several programs from the forthcoming PBS series on chemistry, in which Roald Hoffmann participates as a presenter, were used in this general education course.

Molecular Messengers

For several years, Professor Jerrold Meinwald and his collaborator from the world of biology, Professor Thomas Eisner, offered a popular and interesting graduate-level course called *Chemical Communication*. Now Meinwald is offering a closely related course, *Molecular Messengers in Nature*, to undergraduates with limited background in chemistry; the prerequisite is one year of high school chemistry or one semester of college-level chemistry. Students examine the chemical ways in which organisms, ranging from bacteria to insects and mammals, use chemistry to communicate with each other.

The course is especially innovative because, aside from providing an integrated approach to basic chemical and biological concepts, it has a significant writing component. This has been made possible by the John S. Knight Writing Program's support of graduate student David Rydberg as a teaching assistant. After completion of a number of short writing assignments, each student prepares a term paper exploring some aspect of chemical communication in depth. How nice that a course in chemical communication can be a vehicle for training college students in verbal communication!

Who Was That Masked Man?



The efforts of several chemistry majors during the past two semesters has resulted in the formation of a new campus organization, the Cornell Chemists.

Conceived as a club for chemistry majors, many of the activities of the group are open to the entire chemistry community. Since January, the group has enjoyed a skating party at Lynah Rink, an information session on summer undergraduate research opportunities, and a Happy Hour in Collegetown with several faculty members.

The club's officers, **Emily Ehrenfeld '89**, **Andrea Roberts '89** and **Jeehiun Lee '90**, report that they and their advisers, Professors Laura Philips and Charles Wilcox, are very happy with the student response so far. Posters advertising club activities are easily identified by the appearance of the club's mythical hero, Captain Chemistry.

George F. Morrison Receives Prix Francqui

Professor George H. Morrison, of the Department of Chemistry, has been awarded the Prix Francqui Internationale, and will occupy the International Francqui Chair for the 1988-89 academic year at the University of Antwerp, Belgium. He is giving a series of lectures during the Spring 1989 semester.

Professor Morrison's research in the field of analytical chemistry has previously been recognized with other awards, such as the Eastern Analytical Symposium Award (1986), the American Chemical Society Award in Analytical Chemistry (1971) and the Benedetti-Pichler Award of the American Microchemical Society (1977). He is also the editor of *Analytical Chemistry*, considered to be the most prestigious journal in the field.

Morrison joined the Department of Chemistry as a professor in 1961, after serving as Head of Inorganic and Analytical Chemistry at General Telephone and Electronics for ten years. Early in his career, he pioneered in the development of analytical methods for ultrapure materials, which contributed to the growth of electronic devices such as the transistor and luminescent phosphors used for television.

He was the first to demonstrate the technique of instrumental neutron activation analysis for multielement trace analysis. NASA invited him to serve as a Principal Investigator on the Apollo Lunar Analysis Program from 1969 to 1974. More recently, he has done research with digital image processing for three-dimensional analysis of solids at the micron level.

In addition, he has engaged in biomedical research in collaboration with medical researchers at Harvard Medical School, the University of Virginia Medical School, and Cornell. Most encouraging are his recent results on ion distribution in cancer cells.

The Prix Francqui Internationale was established in memory of Baron Emile Francqui, Governor of the Societé Generale de Belgique before World War II. It is awarded in alternate years to outstanding researchers in the social and physical sciences.

Faculty News

Elected to NAE

Two members of the Field of Chemistry, **Keith E. Gubbins**, Director and Thomas R. Briggs Professor of the School of Chemical Engineering and **Edward J. Kramer**, Professor of Materials Science and Engineering, have been elected to the National Academy of Engineering. The NAE is a private organization that advises the federal government on questions of science and technology.

Faculty Council

Chemistry Professors David Collum and Hector Abruña were elected to the Faculty Council of Representatives for three-year terms beginning July 1, 1989.

Foreign Academies Elect Hoffmann

Professor Roald Hoffmann was elected a foreign member of the USSR Academy of Sciences and the Societas Scientiarum Fennica (Finnish Society of Sciences and Letters). Sixteen US scholars were elected foreign members of the Soviet Academy; Hoffmann was the only chemist among them.

New Grants for Research

Jean M.J. Fréchet - IBM San Jose, *Novel Imaging Systems Based on Photo-initiated Cationic Crosslinking*

Roald Hoffmann - Department of Defense/Navy-Office of Naval Research, *Simple Adsorbates on Transition Metal Surfaces - A Chemical and Theoretical Approach*

Klaus Theopold (with J.R. Shealy) - AKZO, *Synthesis and Evaluation of Molecular Precursors for III-V Semiconductors*

Alumni News

1935

Edward W. Hughes died December 24, 1987. He received his B. Chem. degree in 1924 with Professor Arthur W. Browne. His thesis research in crystallography was carried out under Professor Carleton C. Murdoch in physics. He received his Ph.D. in physical chemistry in 1935. Dr. Hughes also served as assistant to several Baker lecturers, notably W.L. Bragg and Linus Pauling, and was the technical editor for their books at the Cornell Press.

1950

Arnold Fainberg died on June 1, 1988. He received his Ph.D. in 1950 under Professor William T. Miller.

1947

Jacob Riseman, who received his Ph.D. in 1947 under Professor John G. Kirkwood, was selected Inventor of the Year in 1988. He was selected in recognition of contributions to significant processes including semiconductor passivation which improved the performance and reliability of large scale integrated circuits.

1949

Leo Mandelkern, who received his Ph.D. in 1949 under Professor Franklin Long, has received the ACS Award in Applied Polymer Science, sponsored by Phillips Petroleum Co. He will be giving an address at the ACS Meeting in Dallas next month.

1958

Judith B. Carberry (AB '58), a professor at the University of Delaware, received a NSF Career Advancement Award for her project "Effect of Peroxide Pre-oxidation on Microbial Degradation of Toxic Wastes".

1961

Malcolm Stevens, who received his Ph.D. in 1961 under Professor Charles Wilcox, is co-authoring a biography entitled "Against the Devil's Current: The Life and Times of Cyrus Hamlin". Malcolm was a former research chemist for California Research Corporation before he and his wife moved to Turkey, where Malcolm taught at the college Hamlin founded. He later taught at the American University of Beirut and is currently a professor at the University of Hartford.

Student News

Evan R. Williams, a graduate student in Fred McLafferty's group, will receive one of twelve NSF Postdoctoral Fellowships awarded nationally. Evan will use the fellowship at Stanford University, where he will be a Postdoc in Dick Zare's group. His proposal for the fellowship described a new ionization technique combined with novel dissociation methods with mass spectrometry for obtaining molecular weight and structural information about large molecules (10^5 a.m.u.).

The Society of Cornell Chemists asks you to support the cost of printing and mailing this Newsletter with your voluntary, annual dues of $10. Make your 1989 check payable to "Cornell Chemistry" and mail it to The Society of Cornell Chemists, Baker Laboratory, Department of Chemistry, Cornell University, Ithaca NY 14853-1301.

Coming Events - Spring 1989

April 11 **Continental Breakfast, Dallas ACS Meeting**
8:00 am, Bryan Room A at the Hyatt Regency
Tickets are available in advance and at the site through Monday afternoon, April 10.
John Wiesenfeld will tell attendees about university-wide corporate liaision initiatives at Cornell.

April 18, 19, 20 **1988-89 Debye Lectures: Jack Baldwin**, (Waynflete Professor of Chemistry, University of Oxford)
18th - 11:15 am, 700 Clark Hall, *Biosynthesis of Penicillins*
19th - 4:40 pm, 119 Baker Laboratory, *Biosynthesis of Cephalosporins*
20th - 11:15 am, 700 Clark Hall, *An Organic Chemist's View of Some Problems in Biology*

April 24, 25, 26 **1988-89 Bayer/Mobay Lectures: Dotsevi Sogah**, (DuPont Central Research)
Chemical Approaches to Macromolecular Architecture Control
24th - *Principles, Methods and Applications*
25th - *Control of Polymer Structures by Utilizing the Secondary and Tertiary Structures in Proteins*
26th - *Preparation of Well-Defined Organic Material Surfaces*
All lectures will take place at 4:40 pm in 119 Baker Laboratory

May 28 **Commencement**

June 9 **Reunion Weekend, Open House:** 1:30 - 4:00 pm, 125 Baker Laboratory (Faculty Lounge)

June 18 - 22 **ACS National Organic Symposium**
Information is available by calling Conference Services (607)255-6290

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